

The DX Bulletin

SPECIAL REPORT

• America's Oldest Weekly Amateur Radio Publication •

Chod Harris VP2ML Editor

DX Happenings at the International Amateur Radio Union

Region II Conference in Buenos Aires, Argentina

Exclusive to The DX Bulletin

The Radio Club of Argentina hosted delegates representing 24 amateur radio societies from North and South America at the IARU Region II conference in October. [Members of IARU are national ham radio societies, such as the ARRL.] Conference recommendations ranged from standardizing right-hand circular polarization on 2.3 GHz EME to enlarging the DX window on 160 meters. Many of the decisions made at the conference concerned DX and DXing. Among the most notable of these were the following:

10 MHz Band The conference voted to prohibit SSB from this band, at least until secondary status of amateur radio operators (in some countries) is changed. The conference also endorsed a proposal by the ARRL to prohibit contests and award credits on 10 MHz. The delegate from Montserrat argued unsuccessfully against this prohibition, pointing out that many radio societies presently offer award credit for contacts on 10 MHz, and some even sponsor specific awards for the band, without causing undue interference to the fixed services that still have primary access to the band. Although the Region II conference endorsed the League's proposal to ban such awards, the idea will probably not be accepted by IARU Regions I and III.

DXCC Cards The conference asked the League's Board of Directors to investigate whether other IARU member societies could have the privilege of checking DXCC cards from amateurs in their countries. This would greatly reduce the risk of loss of these valuable cards. Whether the ARRL Board or the DXCC desk will go along with this suggestion is another matter, of course, but perhaps the idea can be considered under the Board-mandated study of DXCC.

Dates on QSL Cards Among the most lengthy debates at the conference was over the recommended form of the date on QSLs. Experienced DXers recognize the confusion caused by the US system of dates (month, day, year) while the rest of the world primarily uses day, month, year. In anticipation of greater use of computers to produce and handle QSLs, and in accordance with the SSI (metric) system, the conference agreed that dates on QSLs should be in the form of YY/MM/DD, with two-digit numbers used for each portion of the date. Thus October 26, 1986 would be written 86/10/26.

Portable Callsigns Another controversial decision concerned the form of portable callsigns when operating from another country. The conference finally agreed, after a lengthy debate, to go along with ITU regulations which specify that the country of portable operation should be given first, followed by the home call: VP2M/WB2CHO.

Ten Meter Beacons The conference recognized the value and efficiency of the Northern California DX Foundation's system of 20 meter beacons, and recommended a similar system be established on 10 meters by 1990. Beacons would operate on frequencies between 28190 and 28200, freeing the present 28200-300 segment for normal contacts.

Band Plans DXers will be pleased to hear that the very first items considered in recommending HF band plans for Region II were the DX windows! [Could the influence of the delegate from Montserrat have had anything to do with this priority?] On 160 meters, the IARU Region II band plan has CW and RTTY below 1840 kHz, and phone above 1840. 1830-1840 is the designated CW DX window, and 1840-1850 the SSB DX window. These segments should be reserved for inter-continental QSOs.

On 80 meters 3500-3510 is the CW DX window, while 3775-3800 is the SSB DX window. DX windows for 40 meters include 7035-40 for RTTY and 7080-7100 for SSB. Other details of the recommended band plans are shown in the diagram on the next page.

Other Matters The new format of the IARU HF Championship (formerly Radiosport) was endorsed. Member societies were encouraged to activate their own Headquarters stations as additional multipliers. June 17 was selected as World QRP Day. The Amateur Code was endorsed (see any edition of the ARRL Handbook.) A world-wide HF packet network was endorsed in principle, although packet operation is considered to be third-party traffic and therefore banned in many countries. Certain RTTY and ASCII formats were endorsed as standards. The problem of RFI-susceptibility of other electronic equipment (such as microwave ovens, electronic organs, and furnace controls) was discussed, with particular reference to the case of VE3SR. The conference endorsed the concept that the manufacturers of such equipment (not the ham) should be responsible for RFI-proofing their products. And the conference urged the expansion of the 160 meter band above 1850 in Southern South America, and expansion of the 80-meter band above 3750 in the same region. The delegate from Montserrat made absolutely sure that the conference did NOT endorse the position of Region III, that "recognized the problems caused by DX and DXpeditions."

None of the decisions made at the Buenos Aires conference carries the force of law, nor can an individual member society be compelled to go along with the conference recommendations. However, many

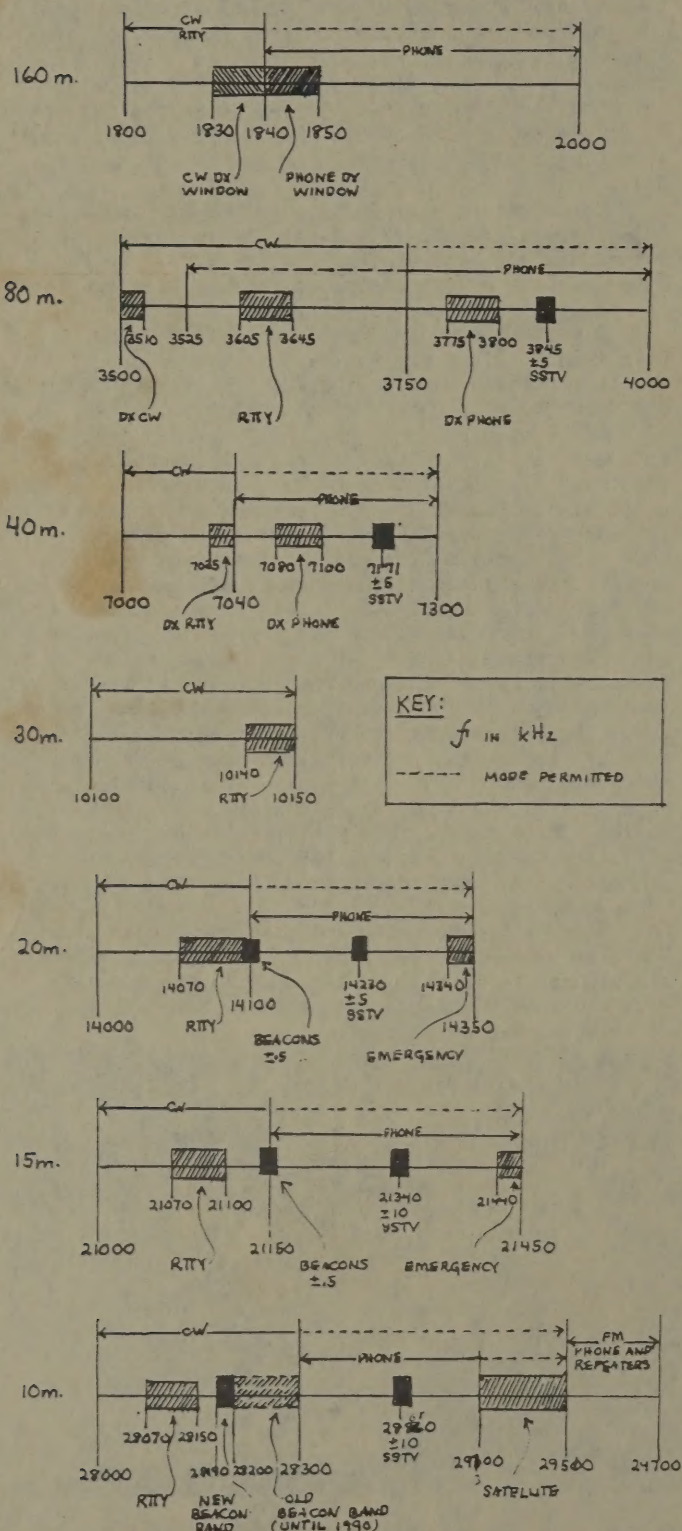
-continued on next page



Committee B was the High Frequency Working Group at the IARU Region II Conference. VP2ML photo.

-continued from previous page
 societies will use these ideas as the basis of their presentations to their telecommunications authorities. Thus many of these suggestions will find their way into regulation and general use in the future.
 Special thanks to the Argentine Radio Club for a super job as host society. Copyright 1986 by Chod Harris VP2ML [The delegate from Montserrat].

The IARU Region II Recommended HF Band Plans
 from the IARU Region II Conference,
 Buenos Aires, Argentina, October 1986



Phase Noise -continued from page 4

Dear TDXB:

I have been following the commentary on the Kenwood TS-940S phase noise problem with great interest. It was my 940 that was measured by K1GQ and written up in *The DX Bulletin*. I also ran tests on another TS-940 using a high-grade laboratory set-up. The results were almost identical to K1GQ's.

Recently I put in the phase noise fix reported by G3OSS (and also printed in *The DX Bulletin*.) Subjectively it seems to make a substantial improvement, based on on-the-air listening. I hope to get the modified unit back into the lab for quantitative tests.

Note that I am not singling out the TS-940S (and TS-930S) as the only offenders in phase noise. All the other synthesized radios have the problem to varying degrees. It's just that the Kenwoods are so popular that the problem has become widespread. I've owned Kenwood rigs for more than 10 years and otherwise find the TS-940S to be an outstanding radio.

I am also astonished by the response given by the ARRL on the subject of phase noise. Phase noise has been recognized in the engineering field for many years (particularly in PLL synthesizers). There are well-established techniques for measuring and quantifying the problem. I hope the ARRL will see fit to do other amateurs a service and address phase noise at close offset in future reviews.

Congratulations to *The DX Bulletin* for the reporting job done in this area, and keep up the good work.

(s) John Kaufmann W1FV

[A good point, John: the reason TDXB gets so much comment on the Kenwood TS-940S is a reflection of the popularity of the radio, not any major intrinsic problem. More than 100 readers asked for copies of Kenwood's phase noise fix, so at least that number must own a 940. Since many (most?) 940 owners won't hack into the guts of their \$2000 rig, the actual percentage of TS-940S owners in TDXB's readership is much higher!]

[The point of *The DX Bulletin*'s coverage of the TS-940S is not to suggest that the rig has serious problems, but rather to help DXers improve an already-fine rig, and to encourage research toward even better radios in the future.

[On the ARRL's attitude toward phase noise, see the letter below. -ed.]

ARRL and Phase Noise

Dear TDXB:

QST has discussed [phase noise] in various articles. See in particular Jan. 1983 QST, page 13. QST has frequently published analyzer photos showing the noise. For example, see Dec. 1984 QST, page 44, for the review of the Yaesu FT-757. Unfortunately, the bandwidth of the noise window used is always omitted from the caption, making it difficult to approximate the actual noise in dBc/Hz.

(s) Maury Harp KF7L

[Thanks, Maury. The Jan. 1983 article clearly explains phase noise and the necessary tradeoffs with other synthesizer parameters. If you want to know more about this topic, see this article.

[Now maybe we can convince the ARRL Technical Department to report noise floors at very close offsets, similar to those in typical CW operation. -ed.]

SPECIAL FEATURE

Almost Athos

[In August of this year, four Italian DXers attempted to stage a major DXpedition to Mt. Athos SV/A. They were not successful, due to the intervention of the Greeks. The DX Bulletin has already published the Greek side of this episode; here is the story from the Italian point of view. Thanks to Tony Privitera IOIJ for furnishing the information for this report. -ed.]

The Italian "Almost Athos" DXpedition began with a proposal from Prof. Meo Furino IOER to the University of Palermo to do a study of ionospheric propagation. His idea was to make a bunch of radio contacts at the bottom of the sunspot cycle, to map changes in the the ionosphere. Meo proposed that the investigation be conducted from a spot remote from sources of electrical interference, surrounded by water, and not too near the tropics. "After careful examination and evaluation, we have reached the conclusion that only the Halkidiki Peninsula, at its extremity of Mount Athos, can guarantee good statistical data," it read!

Although labeled a "Scientific Expedition," the group's proposal specifically mentions operation on amateur frequencies from 160 meters through 432 MHz, and "exchange of of radio signal strength and level of comprehension." In other words, a signal report. There was no question that this was a DXpedition, although that word does not appear in the proposal. The proposal also suggests operation from the top of the mountain, 7 km from the nearest monastery, to avoid disturbing the "spirituality and the ascetic life" of the monks.

The Greek Ministry of Transport and Telecommunications issued a "Temporary Permit" to operate a radio-amateur station to IOER, IOUDUD, IOGPY, and IOIJ. Then on July 1, 1986, the Ministry of Foreign Affairs granted permission for the operation. The only remaining stumbling block was the written permission from the Holy Community that runs Mt. Athos, which finally arrived on July 29 (only two weeks before the planned starting date). The Holy Synod authorized "Entry into Mt. Athos with your vehicle, to utilize the agreed frequencies." [All frequencies listed were amateur allocations. -ed.] They had it! Written permission to conduct a DXpedition in Mt. Athos.

Meanwhile Meo invited a Greek Mt. Athos DXpedition veteran to join the trip. Manos SVI IW operated /SV/A in 1980-81, but this time he balked at the 1/8 share of the costs he was asked to provide. As a final courtesy, Meo wrote to the President of the Greek amateur radio society, the RAAG, describing the operation. Meo sent this letter on the same day he got the final permission from the Monks, so he made an honest effort to keep the Greeks informed.

With time running short, the Italians started packing their van with more than 3500 lbs of gear, including camping equipment and food, 9 transceivers and 3 linears, monobanders and crank-up towers, wire, and 3 electrical generators.

Within a matter of days, the months of careful preparations began to unravel. The local Greek amateurs, still hot under the collar about the disputed operation by Frank Turek DK7FT earlier in the year, felt that the Italians obtained their Mt. Athos operating permission by fraudulent means. Almost as soon as they received Meo's letter explaining the Italian plans, RAAG members argued to government officials that the Italians were out for pecuniary gain and personal glory, and not scientific progress.

The tactic worked, and on Aug. 4, only three days before the team was scheduled to drive to Mt. Athos, the Italian Embassy in Athens received a official note prohibiting all "emissions" from Mt. Athos, and specifically those on any amateur frequency.

The reason given for the revocation of the previously-granted permission was concern that the operation should be for "the progress of Science and the good of Humanity and not for a profit or personal interest."

Pino IOUDUD immediately flew to Athens to try to mend the broken fences and regain their hard-won permission. Through the help of the Italian Embassy, he was able to meet some low-level officials, and based upon this progress, the rest of the team left Rome on August 8.

Pino's efforts to reach decision-level officials failed, however, and the Ministry of Transport and Telecommunications modified the Italians' operating permit to specifically exclude Mt. Athos. "Activity from Mt. Athos must be limited only by listening to radio messages." The Ministry further restricted the Italian license by stating that representatives of RAAG be present at all amateur operations.

The van with all the equipment arrived, and the Italians elected to set up their station near Ouranopolis, only 3/4 mile from the Mt. Athos border (see photo). IOIJ made a few contacts from this spot, but eventually the operation ceased, and the crew headed back to Italy, having spent more than \$12,000 in their unsuccessful attempt to activate Mt. Athos.



Tony IOIJ operating /SV only 3/4 mile from Mt. Athos.

Interestingly, the Italians did visit Mt. Athos, but without their radios. Along with unfruitful attempts to get permission to operate, the Italians had an opportunity to check the Mt. Athos files. They were looking for the file copy of the permission Manos SVI IW received when he operated from Mt. Athos. Msgr. Damaskinos, General Secretary of the Holy Epistasy, stated that the document was a fake, and there was no file with such a serial number!

This could mean the Mt. Athos filing system leaves something to be desired, or that one of the few accredited operations from Mt. Athos was, in fact, illegal. Further, the Monks suggested that they thought radio amateurs were a constant source of irritation into their quiet lives, and that the hams were in it for the money. The latter was based on numerous missent QSLs, many containing Green Stamps.

This latest episode will not encourage the Monks to grant amateur radio permission soon. The obvious infighting among the hams and the accusations of financial gain backed up by the missent QSLs provide powerful incentives to continue to prohibit amateur radio in Mt. Athos. The Greeks have dealt a death blow to their own chances of operating from Athos with this attack on the Italian DXpedition.

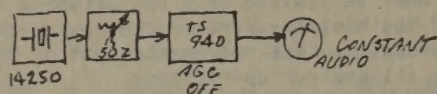
EQUIPMENT NOTES

Phase Noise in the Kenwood TS-940S Testing the Kenwood Fix

by Maury Harp KF7L

I installed Kenwood's modification to reduce phase noise (See TDXB Special Report, Sept., 1986.) However, I have been able to measure only 2-5 dB improvement, not the 15 dB that they mention. I wonder if my unit is not typical? I would like to know what others have measured.

My measurement is done by evaluating the reciprocal mixing within the receiver. I use a crystal oscillator with a calibrated attenuator. Using the CW filter to separate carrier from noise, I tune across the region of interest with the AGC off. I continually reset the attenuator to hold constant audio output. Thus carrier to noise ratio can be read from the attenuator (see diagram). It is hard to know the absolute accuracy of this method, but relative comparisons should be very good.



TS-940S Reciprocal Mixing Test

The test setup imitates the real world situation of a receiver exposed to a very strong signal on a nearby frequency. For the CW contester or DXer, noise at offsets of 2-3 kHz are important, as this is typical of CW pileups. Rating noise at 20 kHz offset doesn't reflect CW requirements.

The Kenwood modification requires changes to the PLL circuit board. This requires considerable dismantling. You must first take off the speaker and switchboard assembly on top. This uncovers the digital A unit. Removing this exposes the PLL unit, which must be taken out of the rig for the modifications. You will remove a total of 36 cable connectors; it may help to keep notes and label the cables. Don't pinch any wires during reassembly. It took me seven hours. [Kenwood says the modification requires one hour or less. Maybe they'll starting from a disassembled radio.-ed.]

Results The Kenwood modification does not add significant filtering to the control lead. Removal of the capacitors reduces the available error signal from the phase discriminator, hence less loop gain. In any case, the speed of control and error correction is little affected.

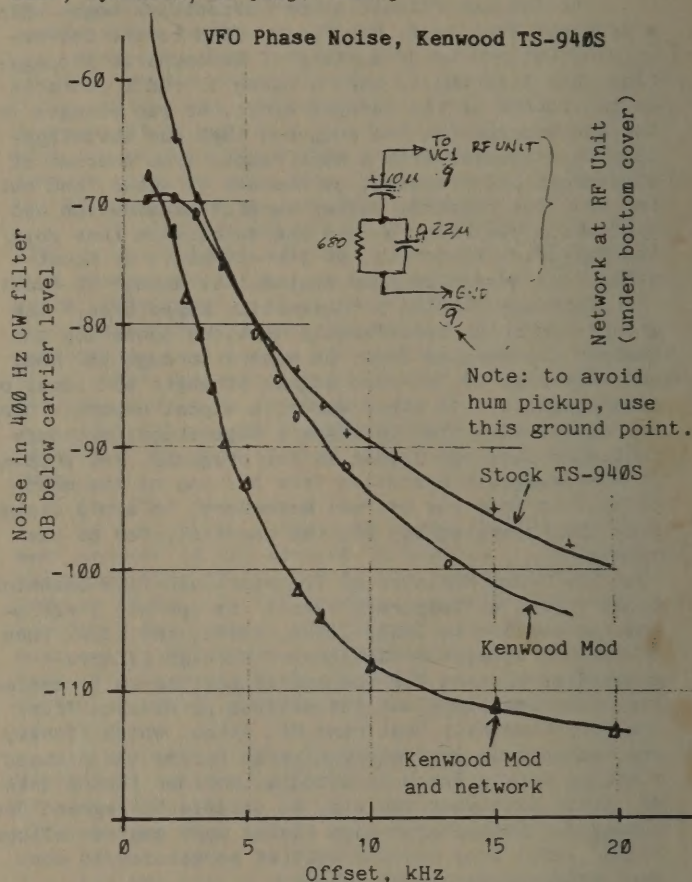
In order to evaluate the intrinsic oscillator noise, an extremely slow filter was tested (RC=1 sec.) This test eliminates discriminator noise. It is found that about 15 dB is all the improvement available from working on the loop design. I decided to add some filtering to the loop until about 15 dB improvement was attained, but no more than that, to prevent affecting the speed of correction.

I have enclosed curves showing what I measured. The simple network shown was computer generated to best meet the target explained above. This network applies to the 10/20 MHz VFO; a different network would be optimum for the 20/30 MHz section. The network connects to the readily-available connector on the RF unit under the bottom cover. However, it depends on having the Kenwood modification already in place.

Loop Acquisition Time As to slowing the time response causing a problem, I find it is impossible to break the lock by spinning the dial. However, when one

goes to full breakin and split frequency, the loop must switch back and forth between dots. For splits of a few kHz, the time measures about 2-4 msec. For wide splits, don't use full breakin, as times as great as 40 msec. are required for the switch. (The time measurement can be easily taken from the UL lead.) It is interesting to note that VFO-A and VFO-B are one and the same oscillator. Switching A to B reprograms the frequency synthesizer, as does the use of RIT.

[Thanks for the analysis, Maury. TDXB is looking forward to hearing from other readers about their experiences with Kenwood's phase noise fix. Meanwhile, direct technical inquiries about the above article direct to Maury Harp KF7L, 13833 20th Place West, Lynnwood, WA 98037. -ed.]



Phase Noise of Stock TS-940S, with Kenwood's modification, and with Kenwood's and KF7L's fix.

Copyright 1986 by The DX Bulletin, 816 Fourth St., Suite 1001, Santa Rosa CA 95404. All rights reserved.

More Letters about the Kenwood TS-940S

Dear TDXB:

Thanks for the information about the phase noise problem in the Kenwood TS-940S. I am also interested in the AGC circuit modifications.

Have you had any comments from other TS-940S owners who have difficulty in getting the rig to transmit when the processor is switched in? I sometimes have to turn mine off and on again to get it to transmit.

(s) Dutch Gruse KY0R

[A rig that won't transmit when the processor is switched on? Sound like the Committee to Clean Up Twenty Meter Phone has convinced Kenwood to add an interesting new wrinkle! Seriously, anyone else have this problem? Or, Dutch, you might ask Kenwood (address in Sept. Special Report.) -ed.]

-continued on page 2

THE DX BULLETIN